UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,548	01/30/2006	Daniel Dreyer	534P015	1051

42754 7590 03/24/2011

Nields, Lemack & Frame, LLC
176 E. Main Street
Suite #5
Westborough, MA 01581

EXAMINER	
ROE, CLAIRE L	
ART UNIT	PAPER NUMBER
1727	

MAIL DATE	DELIVERY MODE
03/24/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,548	DREYER ET AL.	
	Examiner	Art Unit	
	CLAIRE L. ROE	1727	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/12/05* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 28, 2011 has been entered. Claims 1 and 3-27 are pending and are rejected for reasons of record. Claims 1 and 19 have been amended. Claims 26-27 are new.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the Office Action issued on April 28, 2009 which is referred to in the prior office Action issued on August 30, 2010.

Claim Objections

3. Claim 1 is objected to because of the following informality: the limitation “elevated height protrusions including a rib” should read “elevated height protrusions include a rib” (claim 1, line 19) in order to be grammatically correct.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 and 3-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "said protrusions comprising elevated height protrusions adapted for receiving said weld joints, and wherein said elevated height protrusions including a rib in each of the two side edge areas of the separator material and the weld joints include weld joints on these two side ribs" (claim 1, lines 17-21). Similarly, claim 19 recites “said separator material having two side edge areas, and wherein said elevated height protrusions include a rib in each of said two side edge areas of the separator material… and the welded joints include weld joints on said two side ribs” (claim 19, lines 7-10 and 18-19). Both of these limitations are indefinite because it is unclear exactly how the elevated height protrusions including a rib, the side edge areas, and the weld joints are structurally related and oriented. The instant Specification states that “in a preferred version, at least some of the protrusions are constructed as ribs which run vertically and can extend over the entire length of the separator material and can be discontinuous or continuous… it is preferable if in each case one of these ribs runs in one of the side edge areas of the sheet and the fleece material is bonded to the sheet at the sides by in each case a weld seam which runs on these two side ribs” (bottom of page 7). The Specification goes on to state that “it is preferred to use at last one rib 2’ in each case which preferably continuous[ly] runs vertically in each edge area of the middle are 4 of the film” (middle of page 12) and that

"the fleece material 7 is bonded to the outermost two ribs 2' by means of two weld seams 8" (top of page 16).

Therefore, in accordance with the Specification (bottom of page 7, middle of page 12, and top of page 16), the limitations of claims 1 and 19 are interpreted as meaning to state that said separator material for forming a separator comprises two side edge areas [5] and a middle area [4], a first layer in the form of a microporous sheet which has a number of protrusions [2 & 2'], said protrusions comprising elevated height–protrusions adapted for receiving welded joints, wherein said elevated height protrusions include a rib [2'] which runs in each edge area of the middle area of the separator material, and where the welded joints include weld joints on these two side ribs [2'].

Claim Rejections - 35 USC § 103

6. Claims 1, 3-6, 8-16, 18-20, & 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218).

With regard to claims 1, 3-6, 8-16, & 18, Zucker teaches a separator material for forming a separator for a lead-acid accumulator / battery (page 1, paragraph 1), wherein the separator material comprises:

A first layer in the form of a microporous sheet (3, page 6, paragraph 4), which can be made of a thermoplastic material such as polyethylene (page 6, paragraph 4 -

page 7, paragraph 1) having a molecular weight of at least 300,000, a melt index under normal conditions of substantially 0 (zero), and a viscosity number of not less than 600ml/g (page 7, paragraph 1), wherein said polyethylene has a filler content of silica (page 7, paragraph 2), and where said first layer can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (page 11, paragraph 5 - page 12, line 2), where at least 50% of the pores of the first layer have a diameter of 0.5µm or less (page 10, paragraph 3), and where said first layer has a thickness of 0.02-0.3mm in areas without protrusions (page 11, paragraph 4 – page 12, paragraph 1); and

At least one second layer (2, page 6, paragraph 2) in the form of a planar fleece material which is located on a face of the microporous sheet (page 16, paragraph 2), where the second layer can substantially consist of glass fibers (page 12, paragraphs 2-3), can substantially consist of polyester fibers (page 12, paragraphs 2 & 4, & page 13, paragraph 1), or a mixture of glass fibers and polyester fibers (page 14, paragraph 2 & page 13, paragraph 1), where the at least one planar fleece layer can be bonded to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2), and where the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3),

But fails to teach that the second layer is located on a face of the first layer / microporous sheet having such protrusions or that the second layer is located at least at the level of the surface of the first layer / base sheet in the area of the weld joints and does not penetrate into this, or teach that the protrusions/ribs run vertically and extend

over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this (Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of the second layer being located on a face of the first layer / microporous sheet having such protrusions where the second layer is located at least at the level of the surface of the first layer / base sheet in the area of the weld joints and does not penetrate into this of Abbe et al. to the separator of Zucker in order to create a separator which can meet different conditions, both from the standpoint of structure as

well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 45-49).

Modified Zucker fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Kawai(218) teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai(218) to the microporous sheet with protrusions / ribs of modified Zucker in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

Modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

With regard to claim 19, Zucker teaches a process for the production of a separator material for a battery (page 1, paragraph 1 & page 15, paragraph 3 - page 17, paragraph 1) with the steps:

(a) provision of a microporous sheet having a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (page 6, paragraph 4 - page 7, paragraph 1, & page 11, paragraph 5 - page 12, line 2);

(b) provision of at least one second layer in the form of a planar fleece material (page 6, paragraph 2, page 16, paragraph 2);

(c) location of the at least one second layer on a face of the microporous sheet (page 16, paragraph 2); and

(d) bonding / welding / fusing the at least one planar fleece layer to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2),

But fails to teach that the second layer is located on a face of the first layer / microporous sheet having such protrusions or that the second layer is located at least at

the level of the surface of the first layer / base sheet in the area of the weld joints and does not penetrate into this or teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this (Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of the second layer being located on a face of the first layer / microporous sheet having such protrusions where the second layer is located at least at the level of the surface of the first layer / base sheet in the area of the weld joints and

does not penetrate into this of Abbe et al. to the separator of Zucker in order to create a separator which can meet different conditions, both from the standpoint of structure as well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 45-49).

Modified Zucker fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Kawai(218) teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai(218) to the microporous sheet with protrusions / ribs of modified Zucker in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

Modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to

provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

With regard to claim 20, Zucker teaches that the at least one planar fleece layer can be bonded / welded to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2).

With regard to claim 22, Zucker teaches that the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3).

With regard to claim 23, modified Zucker fails to teach the concept of at least some of the protrusions disappearing completely during the welding process.

While modified Zucker fails to teach the concept of at least some of the protrusions disappearing completely during the welding process, Abbe et al. does teach the concept of providing a battery separator that can have irregular, uneven, or nonplanar surface configurations, as desired, to meet different conditions, both from the standpoint of structure as well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 42-49). Furthermore, one of ordinary skill in the art would understand that it would be advantageous to make the protrusions along the edge of the separator disappear completely during the welding process in order to form a seal between the fleece material and the thermoplastic sheet where the protrusions were

located, thus preventing peeling / separation of the fleece material from the thermoplastic sheet, and minimize fraying or cracking of the fleece material.

With regard to claims 24-25, modified Zucker fails to specifically state how the planar fleece material is located / placed on the face of the microporous sheet having protrusions (i.e. gradually laying one of said planar fleece material and said microporous sheet having protrusions on the other in sections or continuously).

While modified Zucker fails to specifically state how the planar fleece material is located / placed on the face of the microporous sheet having protrusions (i.e. gradually laying one of said planar fleece material and said microporous sheet having protrusions on the other in sections or continuously), one of ordinary skill in the art would understand that both methods of production have advantages and disadvantages. One of ordinary skill in the art would understand that gradually laying one of said at least one planar fleece material and said microporous sheet having protrusions on the other in sections (the fleece material being located / placed with two or more protrusions at a time) would be a faster method of production, but would result in not every protrusion being welded to the fleece material (i.e. not every protrusion would have a secure connection to the fleece material). However, one of ordinary skill in the art would also understand that while gradually laying one of said at least one planar fleece material and said microporous sheet having protrusions on the other continuously (the fleece material being located / placed with the protrusion at a time) is a slower method of production, this method would ensure reliable connections between each protrusion and

the fleece material. Therefore it would have been obvious to one of skill in the art to select whichever method suits the desired production requirements (i.e. (a) faster production, but less secure connections, or (b) more secure connections, but slower production).

With regard to claim 26, Zucker teaches that the edge areas of said sheet are not covered with said planar fleece material in order to provide edges for heat sealing which facilitates the formation of pockets (page 14, paragraph 4 – page 16, paragraph 1).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 1 above, and further in view of Farahmandi et al. (US 2001/0020319).

With regard to claim 7, modified Zucker fails to specifically state that the welded joints can be bonded by spot-welding.

Farahmandi et al. teaches that spot welding and ultrasonic welding are two suitable bonding techniques (paragraph [0235]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of bonding via spot-welding of Farahmandi et al. to the bonding technique of modified Zucker because spot-welding is known to be an effective

method of bonding and one would have a reasonable expectation of success sin doing so.

Furthermore, it is noted that the product-by-limitations of claim 7 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (*In re Thorpe*, 227 USPQ 964, 1985). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (*In re Brown*, 173 USPQ 685, and *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 16 above, and further in view of Kawai (JP 55-146872) hereinafter referred to as Kawai(872).

With regard to claim 17, modified Zucker fails to teach the concept of the fleece layer comprising a specified amount of glass fibers.

Kawai(872) teaches the concept of a battery separator comprising a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber in order to prevents short circuit at the time of over discharge (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having a separator comprise a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber of Kawai(872) to the fleece layer of the separator of modified Zucker in order to produce a separator that prevents short circuit at the time of over discharge (abstract).

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 20 above, and further in view of Bohnstedt et al. (US 2003/0129486).

With regard to claim 21, Zucker teaches bonding / welding / fusing the at least one planar fleece layer to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2) and that the microporous sheet can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet / first layer (page 11, paragraph 5 - page 12, line 2), but fails to teach that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs or teach specifically state the height of the protrusions.

Abbe et al. teaches that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having the planar fleece material be bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs of the microporous sheet of Abbe et al. to the separator of Zucker because this is a known method of welding / bonding a planar fleece material to a microporous sheet and one would have a reasonable expectation of success in doing so.

Modified Abbe et al. fails to specifically state the height of the protrusions.

Bohnstedt et al. teaches the concept of a battery separator having ribs have a height of 0.3-1.3mm, and preferably about 0.5mm (paragraph [0019]) while the base thickness (separator thickness not including the protrusions) is 0.1-0.6mm (paragraph [0017]) in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having ribs of height 0.3-1.3mm, preferably about 0.5mm of Bohnstedt et al. to the separator of modified Zucker in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 1 above, and further in view of Nann et al. (US 4,657,799).

With regard to claim 27, Zucker teaches that the edge areas of said sheet are not covered with said planar fleece material in order to provide edges for heat sealing which facilitates the formation of pockets (page 14, paragraph 4 – page 16, paragraph 1).

Nann et al. teaches the concept of a lead-acid accumulator / battery (col. 1, lines 14-16) comprising a separator comprising a sheet material (2) covered by a web layer (3) where the web layer is applied to the sheet material in such a way that area extensions (4) of the web layer are smaller than the inside area of the sheet material defined by the binding seams provided in the edge zones / edge areas (5) such that separator pockets are formed at the edge zones which prevent short-circuits between the positive and negative plates (col. 2, lines 42-48 & col. 1, lines 16-23). Nann et al. goes on to teach that a decisive advantage is obtained by the optimization of the properties / size of the web layer (and thus the size of said edge zones / edge areas) with respect to the improvement of the cycle strength of the plates and better utilization of the positive mass (col. 2, lines 1-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the properties / size of the web layer (and thus the size of said edge zones) because the courts have held that optimization of a results effective variable is not novel (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Furthermore, it has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the

prior art device, the claimed device was not patentably distinct from the prior art device. *In re Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Also see MPEP 2144.

Response to Arguments

Claim Rejections - 35 USC § 103

11. Applicant's arguments with respect to claims 1 and 3-27, filed on January 28, 2011, have been considered but are moot in the view of the new ground(s) of rejection. The new grounds of rejection are necessitated by the Applicant's amendment and all arguments are directed toward the added feature of said separator material comprising two side edge areas and said protrusions comprising elevated height protrusions adapted for receiving said weld joints, wherein said elevated height protrusions include a rib in each of the two side edge areas of the separator material and the welded joints include welded joints in these two side ribs (amended claims 1 and 19).

12. Applicant's arguments with respect to claims 1 and 3-27, filed on January 28, 2011, have been considered but are not persuasive.

On page 3 of the Applicant's Response, Applicants argue that "Zucker only mentions that ribs or studs may be present; there is no disclosure or teaching as to the

particular location of ribs or studs, or welding of fleece material thereto" (Applicant's Response, page 3).

In response to the Applicant's argument that "Zucker only mentions that ribs or studs may be present; there is no disclosure or teaching as to the particular location of ribs or studs, or welding of fleece material thereto" (Applicant's Response, page 3), The Examiner notes that:

1) Abbe is used to teach the concept of having planar fleece material be bonded to at least some protrusions / ribs via welded / fused joints on said protrusions / ribs of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7); and

2) Kawai(218) teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2). I.e. Kawai(218) is used to teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai(218) to the microporous sheet with protrusions / ribs of modified Zucker in order

to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

Modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

Therefore, Applicant's arguments are not persuasive.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. ROE whose telephone number is (571)272-9809. The examiner can normally be reached on Monday, Wednesday, Friday, 6:30AM - 4:00PM, EST and Tuesday, Thursday, 11:30AM - 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1727

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1727